

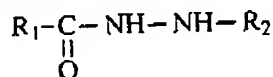
This listing of claims will replace the prior version in the application.

Claims

Claims 1-13 (canceled)

14. (new) A substantially metal free stabilizing composition for chlorine-containing polymers:

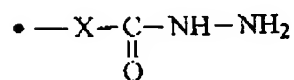
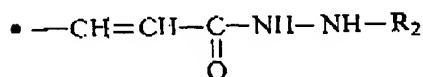
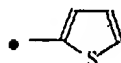
one or more hydrazides compounds having the following formula:



where

R₁ is selected from

- a C₁-C₃₀ alkyl group (linear or branched), a monounsaturated or polyunsaturated C₂-C₃₀ alkyl group, a C₁-C₃₀ alkyl group containing heteroatoms, a C₁-C₃₀ alkyl group substituted by one or more substituted or unsubstituted phenyl groups, an epoxy function, a cycloaliphatic group, a heterocyclic group, one or more halogen atoms, a hydroxy group or an alkoxy group
- a phenyl group, benzyl group, naphthyl group or, toluyl group substituted with -OH, -Cl, -alkoxy, -alkyl, - cycloalkyl, -COOR or -OCOR where R is a C₁-C₁₂ alkyl group



- $\text{---CH=CH-C(=O)OR}_4$
- $\text{C}_6\text{H}_5 - (\text{CH}_2)_n -$ wherein n ranges from 1 to 5 or
- ---NH-NH_2 ;

R_2 is selected from ---H or ---CO-R_3 ;

R_3 and R_4 are independently selected from:

- a $\text{C}_1\text{--C}_{30}$ alkyl group (linear or branched), a monounsaturated or polyunsaturated $\text{C}_2\text{--C}_{30}$ alkyl group, a $\text{C}_1\text{--C}_{30}$ alkyl group containing heteroatoms, a $\text{C}_1\text{--C}_{30}$ alkyl group substituted by one or more substituted or unsubstituted phenyl groups, an epoxy function, a cycloaliphatic group, a heterocyclic group, one or more halogen atoms, a hydroxy group or an alkoxy group or
- a phenyl group, a naphthyl group or a phenyl group substituted by ---OH , ---Cl , alkoxy, alkyl, cycloalkyl, ---COOR or OCOR where R is a $\text{C}_1\text{--C}_{12}$ alkyl group;

X is selected from

- a $\text{C}_1\text{--C}_{30}$ alkylene group (linear or branched), a monounsaturated or polyunsaturated $\text{C}_2\text{--C}_{30}$ alkylene group, a $\text{C}_1\text{--C}_{30}$ alkylene group containing heteroatoms, a $\text{C}_1\text{--C}_{30}$ alkylene group substituted by one or more substituted or unsubstituted phenyl groups, an epoxy function, a cycloaliphatic group, a heterocyclic group, one or more halogen atoms, a hydroxy group or an alkoxy group or
- an ortho, meta, or para phenylene group, a naphthylene group, a phenylene group substituted by ---OH , ---Cl , alkoxy, alkyl, cycloalkyl, ---COOR or OCOR where R is a $\text{C}_1\text{--C}_{12}$ alkyl group;

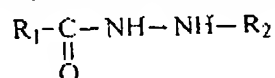
R_1 and R_2 are linked by a covalent bond when R_1 is ---CH=CH--- and R_2 is ---CO--- ;

and a co-stabilizer selected from: polyol alcohols, disaccharide alcohols, perchlorate compounds, glycidyl compounds, layered lattice compounds, zeolite

compounds, phosphite compounds, beta-diketones, beta ketoesters, mercaptocarboxylic esters, metal soaps or mixtures thereof.

15. (new) A substantially metal free stabilizing composition for chlorine-containing polymers:

one or more hydrazides compounds of the formula

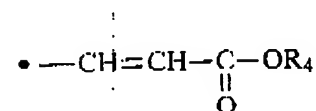
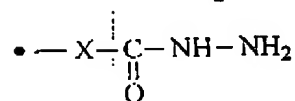
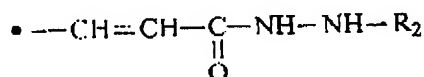
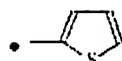


where :

R₁ is selected from

- a C₁-C₃₀ alkyl group (linear or branched), a monounsaturated or polyunsaturated C₂-C₃₀ alkyl group, a C₁-C₃₀ alkyl group containing heteroatoms, a C₁-C₃₀ alkyl group substituted by one or more substituted or unsubstituted phenyl groups, an epoxy function, a cycloaliphatic group, a heterocyclic group, one or more halogen atoms, a hydroxy group or an alkoxy group

- a benzyl group, a naphthyl group, a toluyl group, a toluyl group substituted with -OH, -Cl, -alkoxy, -alkyl, - cycloalkyl, -COOR or OCOR where R is a C₁-C₁₂ alkyl group, or a phenyl group, or a phenyl group substituted with -OH, -Cl, -alkoxy, -alkyl, - cycloalkyl or OCOR where R is a C₁-C₁₂ alkyl group



- C₆H₅ - (CH₂)_n - where n ranges from 1 to 5 or

- -NH-NH₂ ;

R₂ is selected from -H or -CO-R₃;

R₃ and R₄ are independently selected from:

- a C₁-C₃₀ alkyl group (linear or branched), a monounsaturated or polyunsaturated C₂-C₃₀ alkyl group, a C₁-C₃₀ alkyl group containing heteroatoms, a C₁-C₃₀ alkyl group substituted by one or more substituted or unsubstituted phenyl groups, an epoxy function, a cycloaliphatic group, a heterocyclic group, one or more halogen atoms, a hydroxy group or an alkoxy group or
- a phenyl group, a naphthyl group, or a phenyl group substituted by -OH, -Cl, alkoxy, alkyl, cycloalkyl, -COOR or OCOR where R is a C₁-C₁₂ alkyl group;

X is selected from

- a C₁-C₃₀ alkylene group (linear or branched), a monounsaturated or polyunsaturated C₂-C₃₀ alkylene group, a C₁-C₃₀ alkylene group containing heteroatoms, a C₁-C₃₀ alkylene group substituted by one or more substituted or unsubstituted phenyl groups, an epoxy function, a cycloaliphatic group, a heterocyclic group, one or more halogen atoms, a hydroxy group or an alkoxy group or
- an ortho, meta, or para phenylene group, a naphthylene group, a phenylene group substituted by -OH, -Cl, alkoxy, alkyl, cycloalkyl, -COOR or OCOR where R is a C₁-C₁₂ alkyl group;

R₁ and R₂ are linked by a covalent bond when R₁ is -CH=CH- and R₂ is -C(=O)-

and a co-stabilizer selected from: polyol alcohols, disaccharide alcohols, perchlorate compounds, glycidyl compounds, layered lattice compounds, zeolite compounds, phosphite compounds, beta-diketones, beta ketoesters, mercaptocarboxylic esters, metal soaps or mixtures thereof.

16. (new) The stabilizing composition of claim 14 wherein:

R_1 is selected from

- a C_1 - C_{17} alkyl group
- $X-CO-NHNH_2$ where X is a C_1 - C_{17} alkylene group or
- an ortho substituted phenol, a benzene ring, a naphthol, or a cyclo-pentadiene-2,4; and

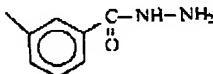
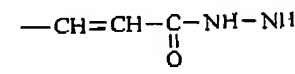
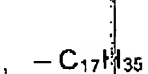
R_2 is selected from H or COR_3 wherein R_3 is a C_1 - C_{17} alkyl group.

17. (new) The stabilizing composition of claim 16 wherein R_1 is selected from methyl, butyl, octyl, ethyl-2-hexyl, stearyl or lauryl.

18. (new) The stabilizing composition of claim 16 wherein R_3 is selected from methyl, butyl, octyl, ethyl-2-hexyl, stearyl, lauryl or benzene ring.

19. (new) The stabilizing composition of claim 16 wherein said C_1 - C_{17} alkylene group is selected from methylene, butylene, octylene, ethyl-2-hexylene, stearyl, dodecylene, or a 1,3-substituted phenylene group.

20. (new) The stabilizing composition of claim 14, wherein at least one of said one or more hydrazides comprises a hydrazide wherein

R_1 is selected from  ,  ,  ,



and R_2 is hydrogen.

21. (new) The stabilizing composition of claim 14, further comprising a co-stabilizer selected from hydrotalcites, trimethylolpropanol, zeolite P, perchlorate compounds, phosphates, an epoxidized soya bean oil, beta-dicarbonyl compounds or mixtures thereof.

22. (new) The stabilizing composition of claim 14, further comprising a zinc carboxylate, an alkali metal carboxylate, an alkaline earth metal carboxylate, an aluminum carboxylate or mixtures thereof.

23. (new) The stabilizing composition of claim 22, wherein said alkali metal carboxylate is calcium stearate.

24. (new) The stabilizing composition of claim 14, further comprising one or more stabilizers, processing aids, lubricants, plasticizers, pigments, fillers, epoxidized fatty acid esters, antioxidants, UV absorbers, light stabilizers, optical brighteners, impact modifiers, processing aids, gelling agents, antistatic aids, biocides, fungicides, metal passivators, flame retardants, blowing agents, antifog agents, compatibilizers, antiplateout agents or mixtures thereof.

25. (new) The stabilizing composition of claim 24, wherein said one or more stabilizer is selected from CaZn systems, BaZn systems, tin systems, amino systems, thiouracil systems, latent mercaptide systems, tris (2-hydroxyethyl) isocyanurate, alphaphenyl indole, pyrrolidines, and mixtures thereof.

26. (new) A chlorine-containing polymer containing the stabilizing composition as claimed in claim 14.

27. (new) The chlorine-containing polymer of claim 26 wherein said chlorine-containing polymer is selected from polyvinyl chloride homopolymer, post chlorinated polyvinyl chloride, or polyvinyl chloride copolymers.

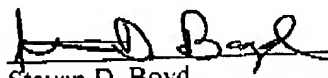
28. (new) A chlorine-containing polymer pipe or pipe fitting containing the stabilizing composition claimed in claim 14.

29. (new) A chlorine-containing polymer sheet, rigid film, flexible film, or profile containing the stabilizing composition claimed in claim 14.

30. (new) The chlorine-containing polymer of claim 26 wherein said stabilizer is present in an amount of from 0.2 to 5 phr.

31. (new) The chlorine-containing polymer of claim 26 wherein said stabilizer is present in an amount of from 1 to 2 phr.

Respectfully submitted.


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Date: March 29, 2006

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